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(REV. 6-87)U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE

ATTORNEY'S DOCKET NUMBER

1066-02

**TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)****10/088818**INTERNATIONAL APPLICATION NO.
PCT/JP01/05369INTERNATIONAL FILING DATE
30 SEPTEMBER 1999 (30.09.99)

PRIORITY DATE CLAIMED

TITLE OF INVENTION

DROP-BOTTOM CONTAINER

APPLICANT(S) FOR DO/EO/US

Ritsuo Nakajima

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items under 35 U.S.C. 371:

1. ☒ This express request to immediately begin national examination procedures (35 U.S.C. 371(f)).
2. ☒ The U.S. National Fee (35 U.S.C. 371(c)(1)) and other fees as follows:

CLAIMS	(1) FOR	(2) NUMBER FILED	(3) NUMBER EXTRA	(4) RATE	(5) CALCULATIONS
	TOTAL CLAIMS	4 -20=	0	x \$18.00	\$
	INDEPENDENT CLAIMS	2 -3=	0	x \$84.00	
	MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+ \$280.00	
	BASIC NATIONAL FEE (37 CFR 1.492(a)(1)-(4)):				
	<input type="checkbox"/> International preliminary examination fee paid to USPTO (37 CFR 1.482).....				\$710.00
	<input type="checkbox"/> No international preliminary examination fee paid to USPTO (37 CFR 1.482) but international search fee paid to USPTO (37 CFR 1.445(a)(2)).....				\$740.00
	<input type="checkbox"/> Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO.....				\$1,040.00
	<input type="checkbox"/> International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(2) to (4).....				\$ 100.00
	<input checked="" type="checkbox"/> International Search Report enclosed				\$890.00
	Surcharge of \$ _____ for furnishing the National fee or oath or declaration later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 mos. from the earliest claimed priority date (37 CFR 1.482(e)).				\$130.00
	TOTAL OF ABOVE CALCULATIONS				\$890.00
	Reduction by 1/2 for filing by small entity, if applicable. Affidavits must be filed also. (Note 37 CFR 1.9, 1.27, 1.28.)				\$445.00
	SUBTOTAL				\$445.00
	Processing fee of \$ _____ for furnishing the English Translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 mos. from the earliest claimed priority date (37 CFR 1.482(f)).				\$130.00
	TOTAL NATIONAL FEE				\$445.00
	Fee for recording the enclosed assignment (37 CFR 1.21(h)).				\$40.00
	TOTAL FEES ENCLOSED				\$445.00

- a. ☒ A check in the amount of \$445.00 to cover the above fees is enclosed.
- b. ☐ Please charge my Deposit Account No. 13-3405 in the amount of \$ _____ to cover the above fees.
A duplicate copy of this sheet is enclosed.
- c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 13-3405. A duplicate copy of this sheet is enclosed.

JC10 Rec'd PCT/PTO 22 MAR 2002

3. A copy of the International Application as filed (35 U.S.C. 371(c)(2))
- a. ☐ is transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
 - c. ☒ has been transmitted by the International Bureau.
4. ☒ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
5. Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
- a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☐ have been transmitted by the International Bureau.
6. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
7. ☐ An oath or declaration of the inventor (35 U.S.C. 371(c)(4)).
8. ☐ A translation of the Annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Other document(s) or information included:

9. ☒ An Information Disclosure Statement under 37 C.F.R. 1.97 and 1.98.
10. ☐ An Assignment document for recording and a Recordation Form Cover Sheet - Patents Only. Please mail the recorded assignment document to the person whose signature, name and address appears at the bottom of this page.
11. The above checked items are being transmitted
- a. ☐ before the 18th month publication.
 - b. ☐ after publication and the Article 20 communication but before 20 months from the priority date.
 - c. ☐ after 20 months but before 22 months (surcharge and/or processing fee included).
 - d. ☐ after 22 months (surcharge and/or processing fee included).
- Note: Petition to revive (37 C.F.R. 1.137(a) or (b)) is necessary if 35 U.S.C. 371 requirements submitted after 22 months and no proper demand for International Preliminary Examination was made by 19 months from the earliest claimed priority date.*
- e. ☒ by 30 months and a proper demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
 - f. ☐ after 30 months but before 32 months and a proper demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date (surcharge and/or processing fee included).
 - g. ☐ after 32 months (surcharge and/or processing fee included).
- Note: Petition to revive (37 C.F.R. 1.137(a) or (b)) is necessary if 35 U.S.C. 371 requirements submitted after 32 months and a proper demand for International Preliminary Examination was made by 19 months from the earliest claimed priority date.*
12. At the time of transmittal, the time limit for amending claims under Article 19
- a. ☐ has expired and no amendments were made.
 - b. ☐ has not yet expired.
13. ☐ Certain requirements under 35 U.S.C. 371 were previously submitted by the applicant on _____, namely:

SCHNADER HARRISON SEGAL & LEWIS

Date: 22 MAR 2002

By: _____

T. Daniel Christenbury, Reg. No. 31,750
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10088818 10/088818

1070 Rec'd PCT/PTO 22 MAR 2002

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE



22469

PATENT TRADEMARK OFFICE

Art Unit :
Examiner :
Serial No. :
Filed : Herewith
PCT No. : PCT/JP99/05369
PCT Filed : September 30, 1999
Inventors : Ritsuo Nakajima
Title : DROP-BOTTOM C-1-ONTAINER

Docket: 1066-02

Conf. No.

Dated: March 22, 2002

PRELIMINARY AMENDMENT

BOX PCT

Commissioner for Patents
Washington, DC 20231

Sir:

Prior to action on the merits of the case, kindly amend the above-identified application as follows:

In the Claims (Clean copy as amended)

3. (Amended) A bottom opening type container according to claim 1, wherein a returning mechanism constituted by rotatably mounting the other end of a lever (6) having a tip end hook (61) to a side face of the bottom plate (11) and lifting an intermediate portion of the lever by a spring (62) is provided, the tip end hook (61) is engaged with the lifting-up arm (51) in a state where the bottom plate (11) has been opened at 90° and the lifting-up arm (51) has fallen down without being lifted upward.

Kindly add the following new claim:

4. (New) A bottom opening type container according to claim 2, wherein a returning mechanism constituted by rotatably mounting the other end of a lever (6) having a tip end

hook (61) to a side face of the bottom plate (11) and lifting an intermediate portion of the lever by a spring (62) is provided, the tip end hook (61) is engaged with the lifting-up arm (51) in a state where the bottom plate (11) has been opened at 90° and the lifting-up arm (51) has fallen down without being lifted upward.

SECRET

-3-

Remarks

We respectfully request that the above-identified amendments entered into the file of the case. They are made to remove multiple dependent claims and to shorten the abstract to comply with new U. S. Patent Office rules and no new matter has been added.

An early action on the merits of the case is respectfully requested.

Respectfully submitted,



T. Daniel Christenbury
Reg. No. 31,750

TDC:gj
(215) 563-1810

Marked up Version in the Abstract

Please replace the abstract in its entirety with the clean copy which is attached.

by the self-weight of the container 1, the ascending and descending block 93 is floated up to open the cam pieces 94, so that the cam pieces 94 are rotated about the shafts 941 by the springs 96 to be opened. In this state, when the container 1 is lifted up, the ascending and descending block 93 moves along the guide groove 95 without being prevented by the cam pieces 94, and the bottom plates 11 are opened due to the weight of the content and the self-weights of the bottom plates 11 so that the content is discharged.

[0006] That is, when the container 1 is lifted up after it is lifted down up to a predetermined position and once landed, the bottom plates 11 open automatically to discharge the content.

[0007] In this manner, the container described in Japanese Patent Application Laid-Open No. 06-115869 publication can open the container bottom plates to discharge the content by only lifting-up and lifting-down operations conducted by a crane. However, in this container,

there is a problem a) that, since a clearance of a length h in a height direction is required in a bottom plate portion, the content may drop due to its nature;

a problem b) that, once the container is landed, the bottom plates are opened in any case, and the like.

[0008] An object of the present invention is to provide a bottom opening type container which solves such a problem, and where the bottom plates can be tightly closed without providing a clearance and where a selection about whether or not the bottom plates should be opened automatically can arbitrarily be made by a simple operation.

SUMMARY OF THE INVENTION

[0009] (1) A bottom opening type container which is constituted with a side plate (13) and a pair of bottom plates (11), comprising: opening and closing shafts (12) of the bottom plates (11) which are mounted in the vicinity of a bottom portion of the side plate (13); engaging pins (14) which are provided in the vicinity of tip ends of the bottom plates (11); a pair of opening and closing arms (57) which are pivoted to opening and closing fulcrums (573) fixed to the side plate (13) and can retain the engaging pins (14) at lower end portions; intermediate links (56) whose one ends are coupled to upper and intermediate

two arms extending in different directions by 90° about the pin (521) serving as a rotation center, lifting holes (511), (512) are provided at respective holes, a pushing-down pin (513) is mounted near to the rotation center of one arm, and S-shaped slits (571) which are fitted to the rocker arm (54) in left and right directions at respective positions of opening and closing are provided in the opening and closing arms (57).

[0011] (3) A bottom opening type container according to claim 1 or 2, wherein a returning mechanism constituted by rotatably mounting the other end of a lever (6) having a tip end hook (61) to a side face of the bottom plate (11) and lifting an intermediate portion of the lever by a spring (62) is provided, the tip end hook (61) is engaged with the lifting-up arm (51) in a state where the bottom plate (11) has been opened at 90° and the lifting-up arm (51) has fallen down without being lifted upward.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] Fig. 1 is a front view showing a state where bottom plates of a bottom opening type container of a first embodiment of the present invention has been closed;

[0013] Fig. 2 is a front view showing a state where the bottom plates of the bottom opening type container of the first embodiment of the present invention has been opened;

[0014] Fig. 3 is a partial front view showing an opening and closing control mechanism in the first embodiment of the invention;

[0015] Fig. 4 is a partial front view showing the opening and closing control mechanism in the first embodiment of the present invention;

[0016] Figs. 5 are partial front views showing a main portion of the opening and closing control mechanism in the first embodiment of the present invention;

[0017] Fig. 6 is a partial front view showing an opening and closing control mechanism in a second embodiment of the present invention;

[0018] Fig. 7 is a partial front view showing the opening and closing control mechanism in the second embodiment of the present invention;

[0019] Figs. 8 are front views showing an operation of a returning mechanism in a third embodiment of the present invention;

[0020] Fig. 9 is a front view of a bottom opening type container showing a conventional

11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000 1001 1002 1003 1004 1005 1006 1007 1008 1009 1010 1011 1012 1013 1014 1015 1016 1017 1018 1019 1020 1021 1022 1023 1024 1025 1026 1027 1028 1029 1030 1031 1032 1033 1034 1035 1036 1037 1038 1039 1040 1041 1042 1043 1044

[0021] Fig. 10 is a plan view of the bottom opening type container showing the prior art.

DESCRIPTION OF THE INVENTION

[0022] A bottom opening type container of the present invention is not lifted up directly when it is lifted up by a crane or the like, but it is configured such that a lifting-up rod for lifting up a container can be ascended and descended relative to a container side plate and bottom plate receiving links provided at a lower end portion of the lifting-up rod restrain engaging pins positioned at tip ends of a container bottom plates from the below, the engaging pins are released only when the lifting-up rod is lowered relative to the side plate by an opening and closing mechanism so that the bottom plates can be opened. Therefore, when a releasing operation is performed, the bottom plates are released by landing the container so that the content is discharged, and when the releasing operation is not performed, the cargo handling can be performed while the bottom plates are closed.

[0023] Alternatively, a portion to be lifted up by a crane is constituted by a lifting-up arm which has two arms and is rotatable by 90°, and the bottom plates are put in a closed state when the container is lifted up by one arm, while the bottom plates are put in a locked state when the container is lifted up by the other arm, so that opening and closing are controlled by changing the lifting-up state.

[First Embodiment]

[0024] A first embodiment of the present invention will be explained with reference to the drawings. Fig. 1 is a front view showing a state of a bottom opening type container 1 whose bottom plates have been closed, and Fig. 2 is a front view showing a state of the bottom opening type container whose bottom plates have been opened, where the same reference numerals are used to parts common to Figs. 9 and 10, and 5 denotes an opening and closing mechanism for the bottom plates 11, 51 denotes a lifting-up arm 51, 531 denotes a manual lever, 572 denotes engaging hook which opens and closes according to operation of the manual lever 531 and action of the opening and closing control mechanism 5 described later to retain the bottom plate 11, and 14 denotes an engaging pin provided at a tip end portion of the bottom plate 11 retained by the engaging hook 572.

[0025] As understood from Fig. 1, the bottom plates 11 of the container are approximately completely closed by engaging the engaging pins 14 with the engaging hooks 572, and it is unnecessary to provide such a clearance as viewed in Fig. 9 and described above.

[0026] Next, the opening and closing control mechanism 5 will be explained. Figs. 3 and 4 are front views which show the opening and closing control mechanism 5 in different states, respectively, according to the embodiment. The same reference numerals are used in parts common to the above-described embodiment. 51 denote a lifting-up arm which is engaged with a hook when the container is lifted up by a crane or the like, 52 denotes a lift rod which is coupled to the lifting-up arm 51 via a pin 521, 53 denotes a sleeve in which the lifting rod 52 is inserted, 54 denotes a rocker arm which is mounted in the vicinity of a lower end of the sleeve to ascend and descend together with the sleeve, 55 denotes a block which is fixed to the vicinity of the lower end of the lift rod 52 through a screw connection, 56 denotes an intermediate link whose one end is connected to the block 55, and 57 denotes an opening and closing arm which is connected to the other end of the intermediate link 56. A spring 532 is inserted between a lower end of the sleeve 53 and the block 55, and the manual lever 531 which is rotatable by 180° in a horizontal direction using the lifting rod 52 as a rotation shaft is inserted between an upper end of the sleeve 53 and the lifting arm 51. Further, an extension portion 522 of the lifting rod 52 is screwed into the block 55 from the below and it is inserted into a hole of a protrusion piece 13a in the vicinity of a container bottom portion so that the protrusion piece serves as a guide when the lifting rod 52 ascends and descends. The opening and closing arm 57 is rotatable about an opening and closing fulcrum 573 provided on the container bottom portion. In a state where the lower end engaging hook 572 is positioned vertically, as shown in Fig. 3, the hook engages the engaging pin 14 mounted to the bottom plate 11 of the bottom opening type container from the outside so that the hook maintains the bottom plate so as not to open. Further, an upper end portion of the opening and closing arm 57 is provided with a S-shaped slit 571 and it is engaged with a tip end portion of the above-described rocker arm 54 via a lock pin 541, and an upper and intermediate portion thereof is connected with the other end of the intermediate link 56, as described above.

[0027] The lifting arm 51 has one short arm and one L-shaped arm on both sides of a pin

[0032] Since the opening and closing control mechanism 5 of this embodiment has been configured in the above manner, one example of how to use the container will be explained as follows:

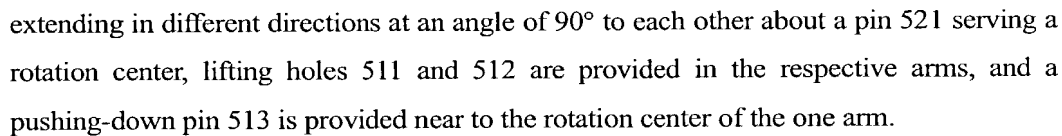
[0033] As shown in Fig. 3, the manual lever 531 is moved at the “Close” position on the left side, and even if the container is lifted up by using the lifting hole 511 to be moved or lifted down, the bottom plates do not open. The container is once landed and the manual lever 531 is rotated by 180° to be moved to the “Open” position on the right side, and when the container is lifted up and it is landed again, the bottom plates open so that the content is discharged. After the cargo is charged, when the empty container is landed again and the manual lever 531 is returned back to the close position, a cargo handling work can be performed with the container whose bottom plates have been closed, again.

[0034] In a case of this embodiment, when the manual lever 531 is moved to the “Close” position, the bottom plates of the container are prevented from opening, and all operations of lifting-up and lifting-down, a transverse movement, and opening and closing of the container can be performed by only operations in the crane, so that it is unnecessary to approach to a lifted cargo which is dangerous for a worker. In addition, since it can be confirmed clearly from a far position that the manual lever 531 is positioned at the “Close” position, all workers around the cargo can work safely.

[Second Embodiment]

[0035] A second embodiment of the present invention will be explained with reference to the drawings. Since a bottom opening type container itself is similar to that of the first embodiment, and there are many points common to the first embodiment regarding the opening and closing control mechanism, this embodiment will be explained mainly regarding different points below. Figs. 6 and 7 are front views showing an opening and closing control mechanism in different states, respectively, according to the embodiment. Same reference numerals will be used for parts common to parts which have been explained previously.

[0036] 51 denotes a lifting-up arm to which a hook is applied when the container is lifted up by a crane or the like. In this embodiment, the lifting-up arm 51 has two arms



[0037] In Fig. 6, the lifting hole 511 on the side where the pushing-down pin 513 is mounted is intended to be used for lifting. In this case, the pushing-down pin 513 is positioned at an ascended position and the sleeve 53 is positioned at an ascended position relative to the rod 52.

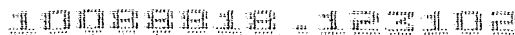
[0038] Next, in Fig. 7, the other lifting hole 512 of the lifting-up arm 51 is lifted up. In this case, the lifting-up arm 51 rotates by 90° and the pushing-down pin 513 is pushing down the head portion of the sleeve 53.

[0039] Since the block 55 is pushed down by this action, the upper portions of the opening and closing arms 57 are drawn inward by the intermediate links 56, and the engaging hook portions 572 at lower end are opened outward, so that the engaging pins 14 are released. Thereby, the bottom plates can be opened.

[0040] One example of how to use a container using the opening and closing control mechanism 5 structured above will be explained as follows:

[0041] As shown in Fig. 6, in a case that the container is lifted up using the lifting hole 511 on the side where the pushing-down pin 513 is provided, the bottom plates do not open even when movement or lifting-down of the container is performed. After the container is once landed and a hook of the crane is reattached to another lifting hole 512, when the container is lifted up again and landed, the bottom plates are opened so that the content is discharged. After discharging, the empty container is landed again and the hook is reattached to the other hole so that cargo handling work can be performed with the container whose bottom plates have been closed, again.

[0042] In this case, opening and closing of the bottom plates 11 of the container can be controlled by selecting one of the two lifting holes 511 and 512 so that such an accident as erroneous opening of the bottom plates 11 can be prevented substantially securely. In addition, all operations of lifting-up and lifting-down, a transverse movement, and opening and closing of the container can be performed by only operations in the crane, so that it is unnecessary to approach to a lifted cargo which is dangerous for a worker.



CLAIMS

1. A bottom opening type container which is constituted with a side plate (13) and a pair of bottom plates (11), comprising: opening and closing shafts (12) of the bottom plates (11) which are mounted in the vicinity of a bottom portion of the side plate (13); engaging pins (14) which are provided in the vicinity of tip ends of the bottom plates (11); a pair of opening and closing arms (57) which are pivoted to opening and closing fulcrums (573) fixed to the side plate (13) and can retain the engaging pins (14) at lower end portions; intermediate links (56) whose one ends are coupled to upper and intermediate portions of the opening and closing arms (57); a block (55) which is connected to the other ends of the intermediate links (56); a lifting rod (52) which is screw-coupled to the block (55); a sleeve (53) which is inserted with the lifting rod (52); a rocker arm (54) which is mounted in the vicinity of a lower end of the sleeve (53) and which ascends and descends together with the sleeve (53); a lifting-up arm (51) which is coupled to the lifting rod (52) via a pin (521); a manual lever (53) which is inserted between the lifting-up arm (51) and an upper end of the sleeve (53) to be rotatable by 180° in a horizontal direction using the lifting rod (52) as a rotation shaft; and a stopper for a lever (58) which is provided at a lower portion of the manual lever (53) to prevent the manual lever from lowering, wherein the vicinities of both ends of the rocker arm (54) are engaged with upper end portions of the opening and closing arms (57), the lifting-up arm (51) has one short arm and one L-shaped arm on both sides about the pin (521) serving as a rotation center, a pushing-down pin (513) is provided near to the rotation center of the short arm and a lifting hole (511) is provided at a tip end of the L-shaped arm, and S-shaped slits (571) which are fitted to the rocker arm (54) in left and right directions at respective positions of opening and closing are provided in the opening and closing arms (57).

2. A bottom opening type container which is constituted with a side plate (13) and a pair of bottom plates (11), comprising: opening and closing shafts (12) of the bottom plates (11) which are mounted in the vicinity of bottom portion of the side plate (13); engaging pins (14) which are provided in the vicinity of tip ends of the bottom plates (11); a pair of

opening and closing arms (57) which are pivoted to opening and closing fulcrums (573) fixed to the side plate (13) and can retain the engaging pins (14) at lower end portions; intermediate links (56) whose one ends are coupled to upper and intermediate portions of the opening and closing arms (57); a block (55) which is connected to the other ends of the intermediate links (56); a lifting rod (52) which is screw-coupled to the block (55); a sleeve (53) which is inserted with the lifting rod (52); a rocker arm (54) which is mounted in the vicinity of a lower end of the sleeve (53) and which ascends and descends together with the sleeve (53); and a lifting-up arm (51) which is coupled to the lifting rod (52) via a pin (521), wherein the vicinities of both ends of the rocker arm (54) are engaged with upper end portions of the opening and closing arms (57), the lifting-up arm (51) has two arms extending in different directions by 90° about the pin (521) serving as a rotation center, lifting holes (511), (512) are provided at respective holes, a pushing-down pin (513) is mounted near to the rotation center of one arm, and S-shaped slits (571) which are fitted to the rocker arm (54) in left and right directions at respective positions of opening and closing are provided in the opening and closing arms (57).

3. A bottom opening type container according to claim 1 or 2, wherein a returning mechanism constituted by rotatably mounting the other end of a lever (6) having a tip end hook (61) to a side face of the bottom plate (11) and lifting an intermediate portion of the lever by a spring (62) is provided, the tip end hook (61) is engaged with the lifting-up arm (51) in a state where the bottom plate (11) has been opened at 90° and the lifting-up arm (51) has fallen down without being lifted upward.

ABSTRACT

In the present invention, such a structure is employed that a clearance in the vicinity of the bottom plates of a bottom opening type container is removed and one of automatic opening and closing of the container can arbitrarily be selected by a simple operation.

Specifically, a container is constituted with opening and closing shafts (12) of bottom plates (11) which are mounted in the vicinity of a bottom portion of a pair of side plates (13); engaging pins (14) which are provided in the vicinity of tip ends of the bottom plates (11); a pair of opening and closing arms (57) which are pivoted to opening and closing fulcrums (573) fixed to the side plate (13) and can retain the engaging pins (14) at lower end portions; intermediate links (56) whose one ends are coupled to upper and intermediate portions of the opening and closing arms (57); a block (55) which is connected to the other ends of the intermediate links (56); a lifting rod (52) which is screw-coupled to the block (55); a sleeve (53) which is inserted with the lifting rod (52); a rocker arm (54) which is mounted in the vicinity of a lower end of the sleeve (53) and which ascends and descends together with the sleeve (53); a lifting-up arm (51) which is coupled to the lifting rod (52) via a pin (521); a manual lever (53) which is inserted between the lifting-up arm (51) and an upper end of the sleeve (53) to be rotatable by 180° in a horizontal direction using the lifting rod (52) as a rotation shaft; and a stopper for a lever (58) which is provided at a lower portion of the manual lever (53) to prevent the manual lever from lowering, wherein the vicinities of both ends of the rocker arm (54) are engaged with upper end portions of the opening and closing arms (57), the lifting-up arm (51) has one short arm and one L-shaped arm on both sides about the pin (521) serving as a rotation center, a pushing-down pin (513) is provided near to the rotation center of the short arm and a lifting hole (511) is provided at a tip end of the L-shaped arm, and S-shaped slits (571) which are fitted to the rocker arm (54) in left and right directions at respective positions of opening and closing are provided in the opening and closing arms (57).

Fig. 1

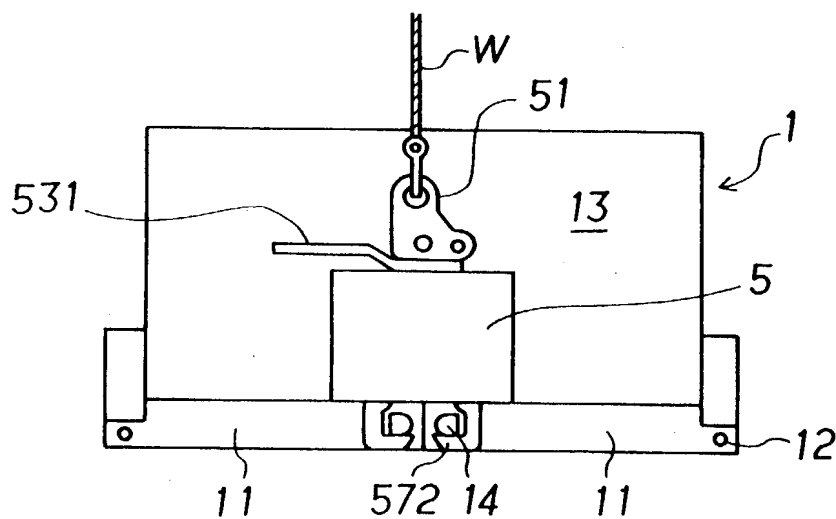


Fig. 2

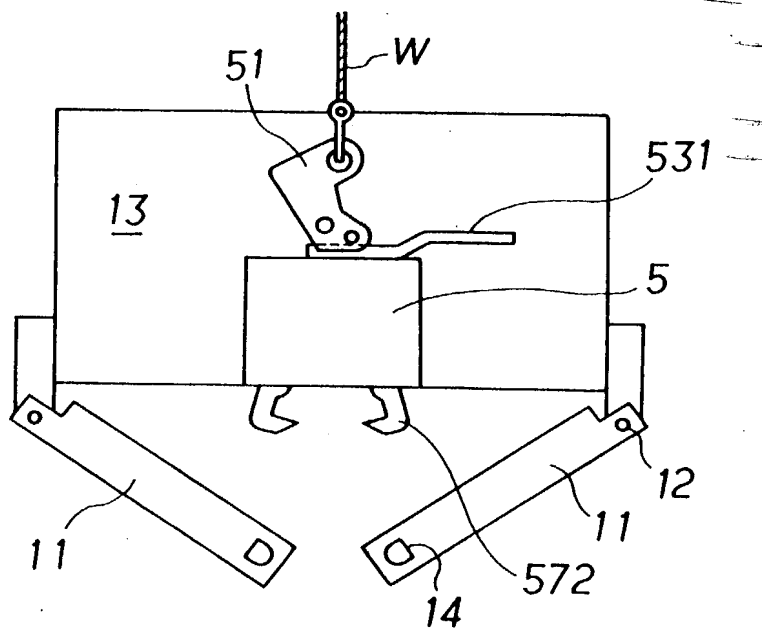


Fig. 3

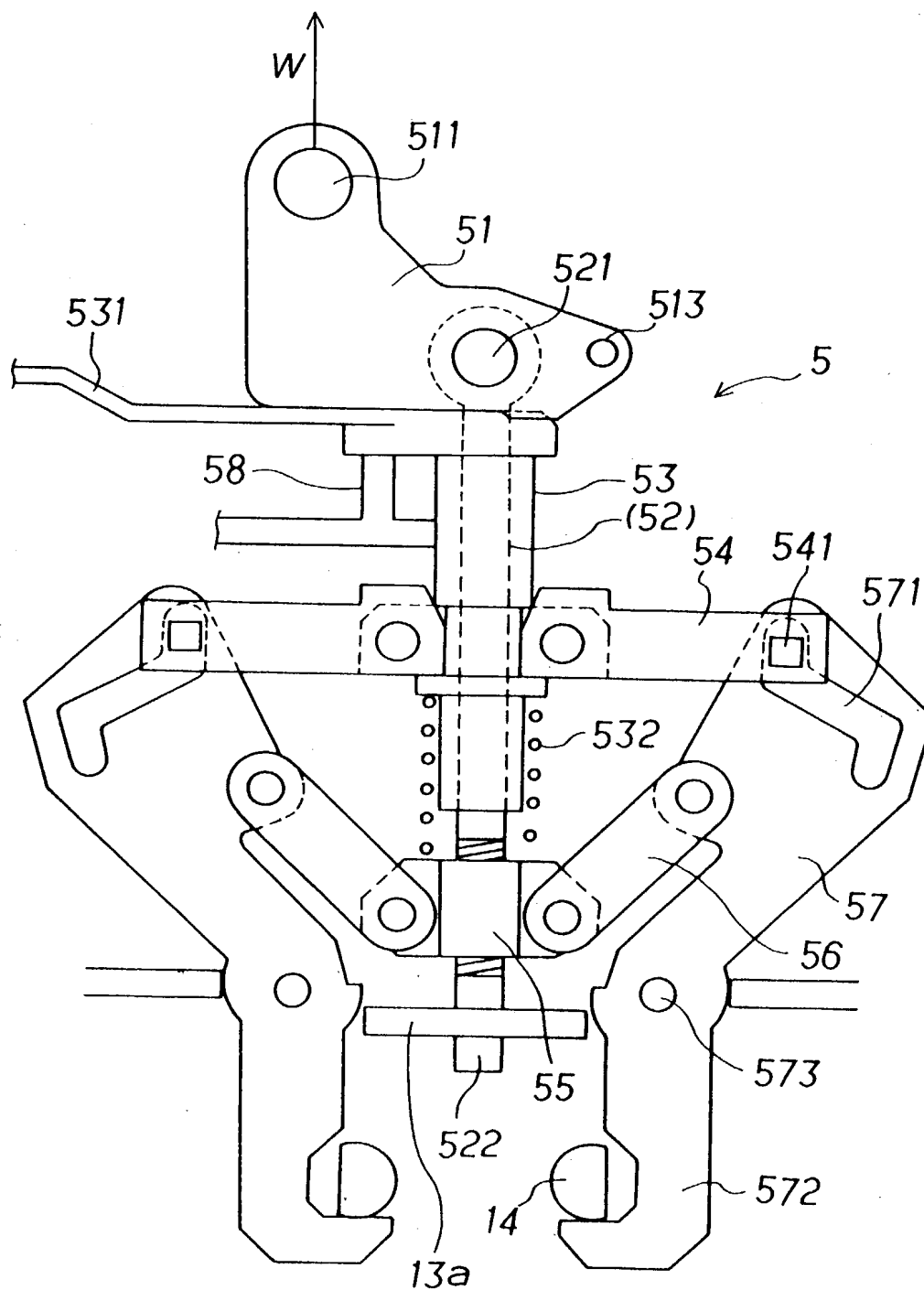


Fig. 4

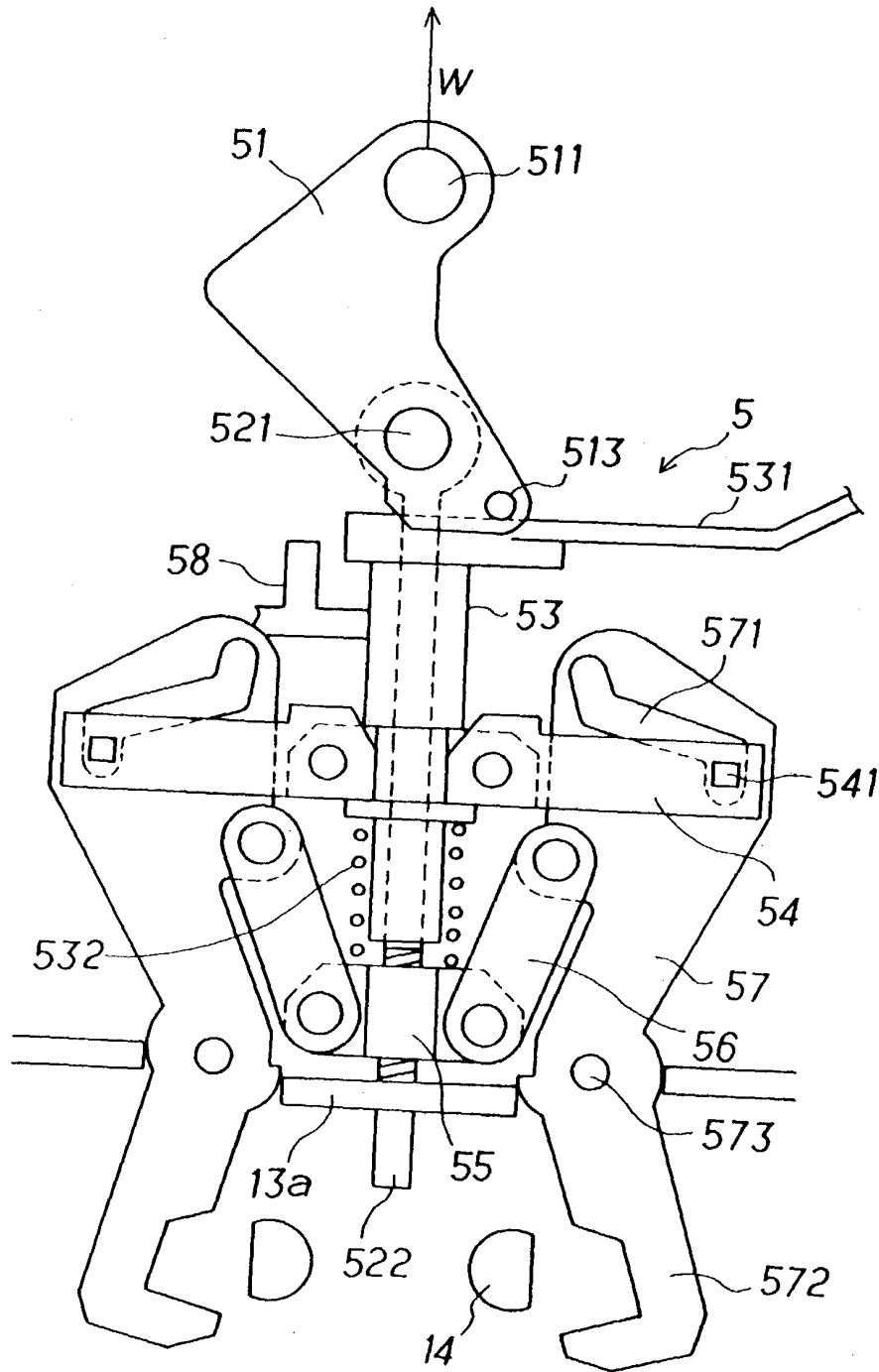


Fig. 5

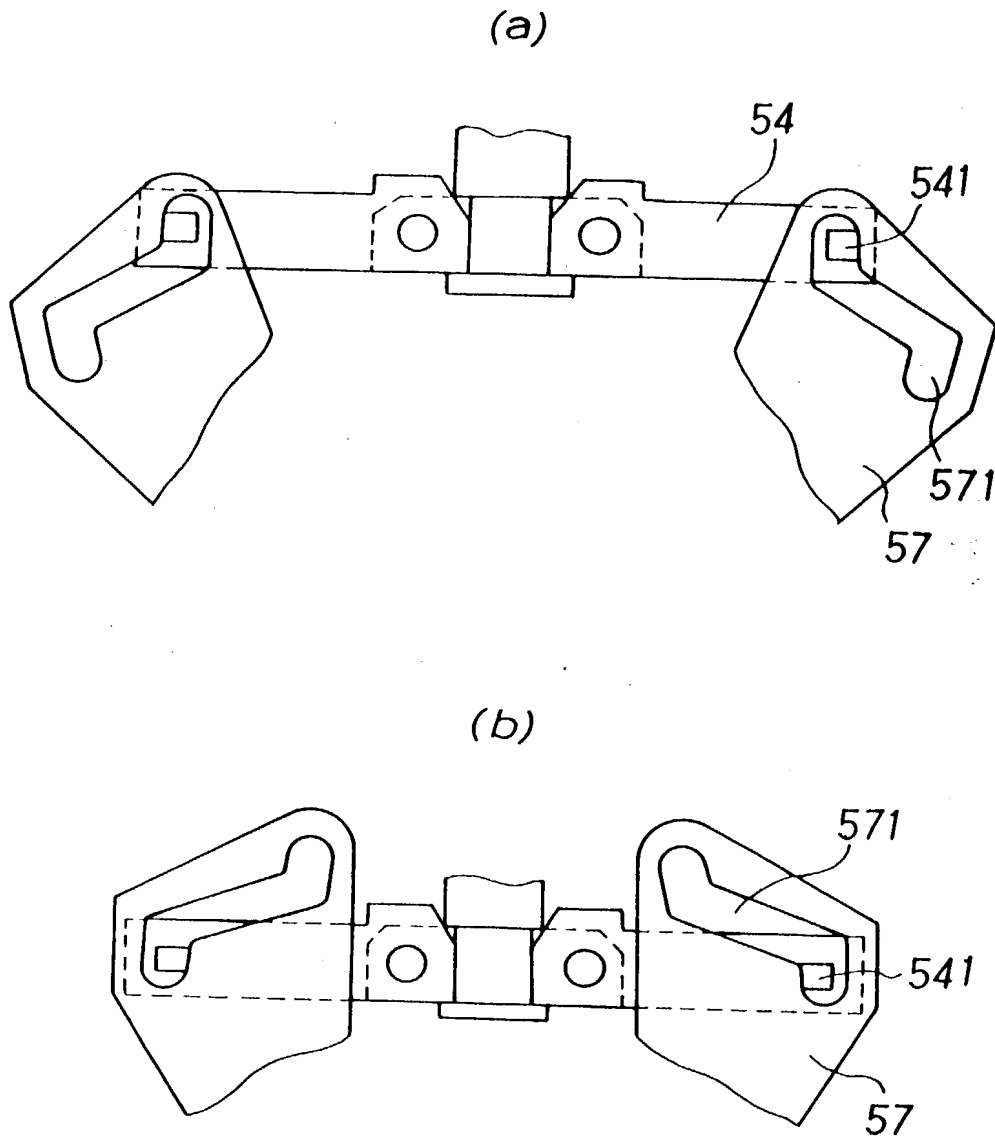


Fig. 6

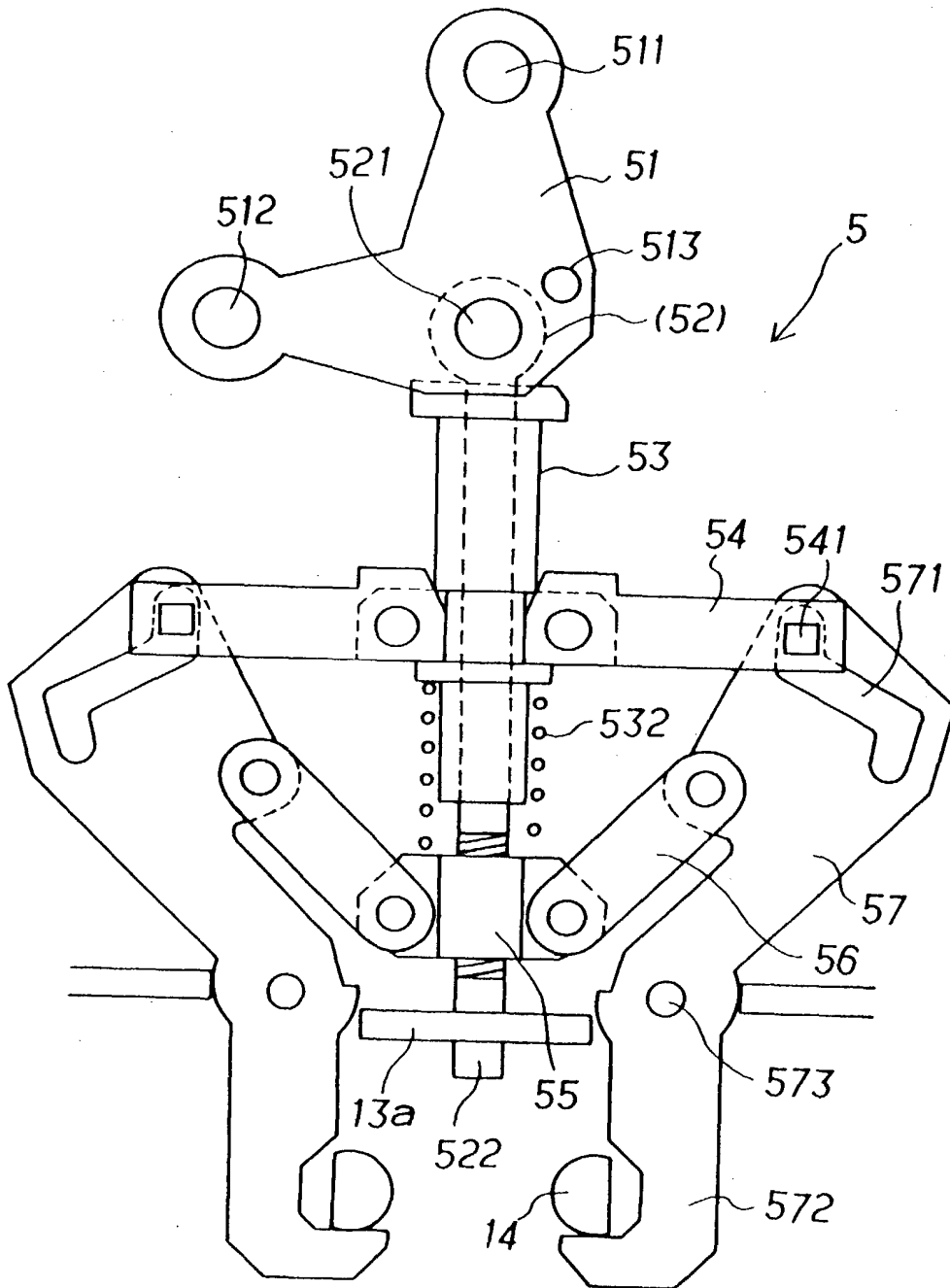


Fig. 7

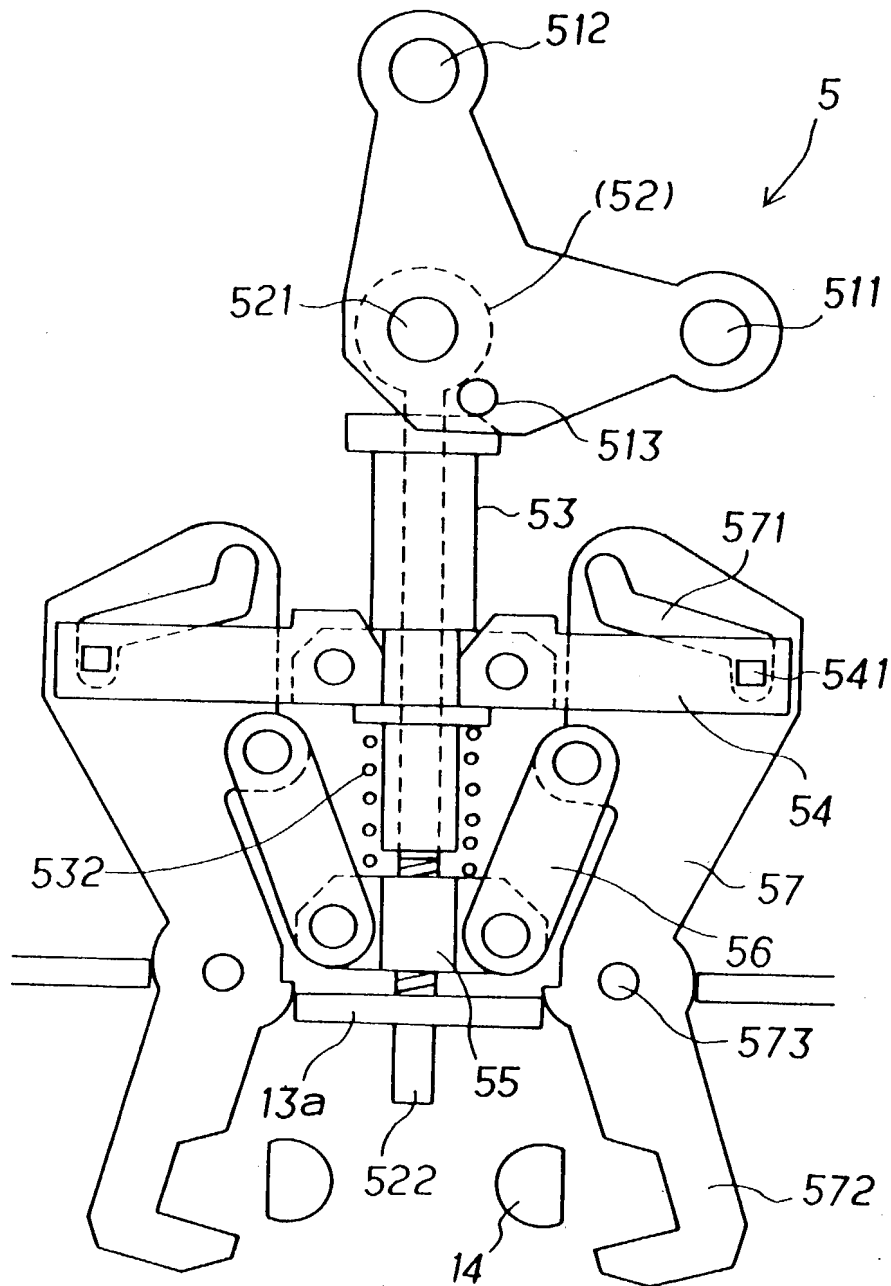


Fig. 8

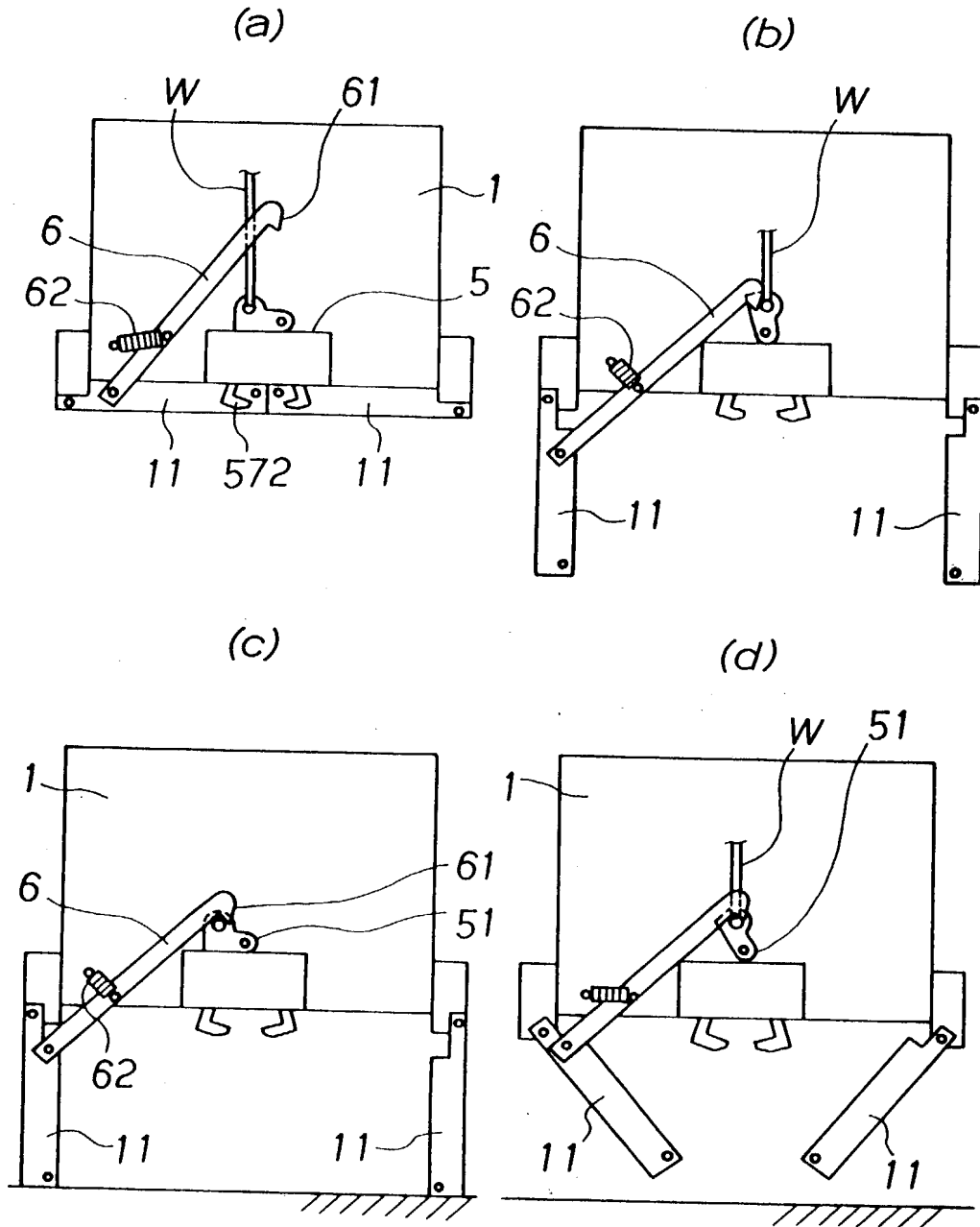


Fig. 9

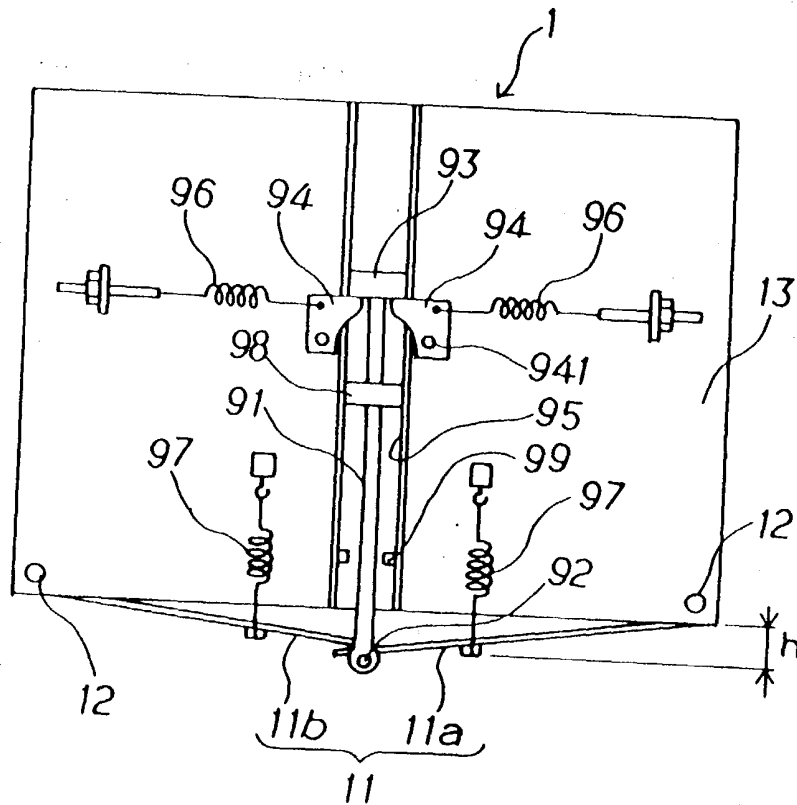
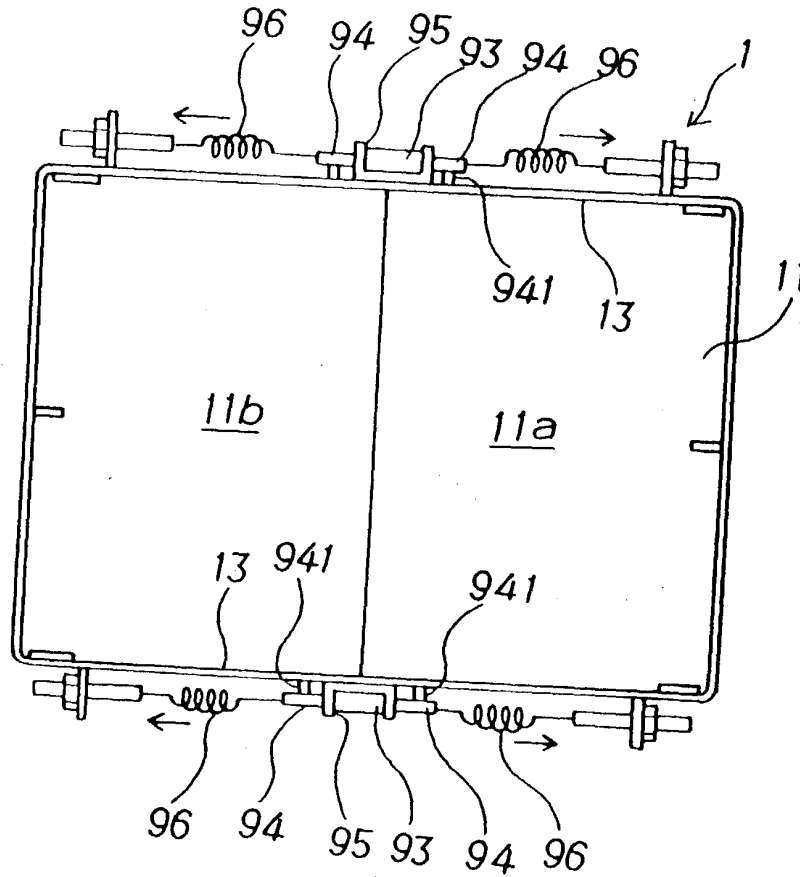


Fig. 10



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(Page 2)

Attorney Docket No. 1066-02

I hereby claim foreign priority benefits under Title 35, United States Code, §119(a)-(d) or §365(b) of any foreign application(s) for patent or inventor's certificate, or §365(a) of any PCT International Application which designated at least one country other than the United States of America, listed below and have also identified below any foreign application(s) for patent or inventor's certificate or of any PCT International Application having a filing date before that of the application on which priority is claimed:

Number	Country	Date of Filing (day,month,year)	Priority Claimed
			<input type="checkbox"/> yes <input type="checkbox"/> no
			<input type="checkbox"/> yes <input type="checkbox"/> no
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(Filing Date)

(Status) (patented, pending, abandoned)

(Application Serial No.)

(Filing Date)

(Status) (patented, pending, abandoned)

POWER OF ATTORNEY: As a named inventor, I hereby appoint the registered attorneys listed under Customer No. 022469 and the following registered attorneys to prosecute this application and transact all business in the United States Patent and Trademark Office connected therewith:

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Attorney Docket No. 1066-02

☐ Original Application

☒ PCT National Application
U.S. Designated Office

☐ Continuation or Divisional Application

☐ Continuation-in-Part Application

**COMBINED DECLARATION,
POWER OF ATTORNEY AND PETITION**

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled DROP-BOTTOM CONTAINER

☐ which is described in the specification and claims

☐ attached hereto.

☐ filed on _____

Application Serial No. _____

and was amended on _____ (if applicable)

■ which is described in International Application No. PCT/IP99/05369

filed September 30, 1999 and as amended on _____ (if any),

which I have reviewed and for which I solicit a United States patent.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 C.F.R. §1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

COMBINED DECLARATION, POWER OF ATTORNEY AND PETITION 123456789
(Page 3)

Attorney Docket No. 1066-02

I hereby petition for grant of a United States Letters Patent on this invention.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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